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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/762,858

01/21/2004

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02/09/2005

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EXAMINER

TON, MY TRANG

ART UNIT

PAPER NUMBER

2816

DATE MAILED: 02/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/762,858

Applicant(s)

FRAZIER, GARY A.

Examiner

My-Trang N. Ton

Art Unit

2816

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.


MY-TRANG NUTON
PRIMARY EXAMINER

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/21/04.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Objections

Claims 6 and 10-11 are objected to because of the following informalities:

In claim 6, line 1, it is suggested that before "including", -- wherein said second portion -- should be added.

In claim 10, line 1, it is suggested that before "including", -- wherein said second portion -- should be added.

In claim 11, line 1, it is suggested that before "including", -- wherein said second portion -- should be added.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 4-5, 12-18 and 20-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Frazier et al (U.S Patent No. 6,359,520).

Frazier et al disclose in Fig. 10 an RTD oscillator including:

Regarding claim 1: a first portion (121, 123) which is coupled between first and second nodes (nodes connected to 121 and 123) and which includes a resonant tunneling device (123);

a second portion (124) which is coupled between the first and second nodes (nodes connected to 126, 121 and 123) and which has an electrical reactance that includes at a selected frequency a complex conjugate reactance of a reactance of the resonant tunneling device (123) at the selected frequency, so that at the selected frequency the complex conjugate reactance substantially cancels the reactance of the resonant tunneling device (because the structure of the claim is fully met so the functional limitation is also met).

Regarding claim 2: the resonant tunneling device is a resonant tunneling diode (123).

Regarding claim 4: the selected frequency is greater than 100 GHz (see col. 5, line 9 discloses an operating frequency of 500 GHz (500GHz is greater than 100GHz)).

Regarding claim 5: the second portion (124) includes an inductor (126) which is coupled between the first and second nodes (nodes connected to 121, 123 and 126), the complex conjugate reactance including an inductance of the inductor (an inductance of 126).

Regarding claim 12: the second portion (124) includes a plurality of components (128, 126) with respective impedances that collectively define the complex conjugate reactance, the plurality of components including at least one inductor (126) and at least one capacitor (128).

Regarding claim 13: the reactance of the resonant tunneling device includes an intrinsic capacitance and a terminal reactance of the resonant tunneling device (see Fig. 1).

Regarding claim 14: the reactance of the resonant tunneling device includes an intrinsic capacitance of the resonant tunneling device but excludes a terminal reactance of the resonant tunneling device (see Fig. 7).

The method recited in claim 15 is similarly rejected as claim 1 and inherent to the operation of the improved resonant tunneling device oscillator of Frazier et al.

Claim 16 is similarly rejected as claim 2.

Claim 17 is similarly rejected as claim 4.

Claim 18 is similarly rejected as claim 5.

Claims 20 and 21 are similarly rejected as claims 13-14.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 6-11 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frazier as applied to claim 1 above in view of Tang (U.S Patent No. 5,930,323).

As stated above, every element of the claimed invention recited in above claims can be seen in the circuit of Frazier et al. However, this reference does not specifically show the "further resonant tunneling device, the resonant tunneling devices being coupled in series" as recited in claim 3; "the inductor and the blocking capacitor being

coupled in series with each other" (claim 6), "transmission line" (claims 7-9 and 19), "first and second blocking capacitors" (claim 10), "first and second coils" (claim 11).

Regarding claim 3: Tang teaches in fig. 4 a series connected pair of resonant tunneling diodes 22, 24 to achieve a bistable operating state.

It would have been obvious to one of ordinary skill in the art at the time the invention was filed to substitute of one well known resonant tunneling diodes stage for another (see Figs. 2-3A of Tang). For example, substitute series stage 121, 123 of Frazier with the series connected pair of resonant tunneling diodes 22, 24 of Tang since they are both well known resonant tunneling device oscillator type.

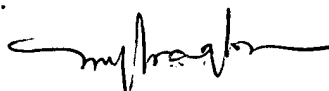
Regarding the limitation recited in claims 6-11 and 19, this different is not a patentable one since it involves merely using different devices (the inductor and the blocking capacitor being coupled in series with each other, a transmission line, first and second blocking capacitors or a transformer) without any difference in operative result. Therefore, it would have been obvious at the time the invention was made for one skilled in the art to realize the circuit of Frazier using the particular devices recited in the claims since these limitations drawn to the particular devices connection are seen as a design expedient that depends upon the desired output. For example: see Harvey et al (U.S Patent No. 5,223,802).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to My-Trang N. Ton whose telephone number is 571-272-1754. The examiner can normally be reached on 7:00 a.m - 5:30 p.m.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Callahan can be reached on 571-272-1740. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



My-Trang N. Ton
Primary Examiner
Art Unit 2816

February 3, 2005